Reg. Std 7.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

CONFIDENTIAL

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

AUG 20 1992

MEMORANDUM

SUBJECT: PP#1G04006 (CBTS #9845; Barcode #D178112). DE-498 and DE-498/Trifluralin on Soybeans. Amendment dated 7/14/92. (MRID #'s 424070-00, 424070-01, 424070-02, 424070-03, and 424070-04).

FROM: Nancy Dodd, Chemist
Tolerance Petition Section II
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Health Effects Division (H7509C)

THRU: Debra Edwards, Ph.D., Acting Chief
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Health Effects Division (H7509C)

TO: Joanne Miller, PM#23
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and

Toxicology Branch II-Herbicide, Fungicide, and Antimicrobial Support
Health Effects Division (H7509C)

DowElanco has submitted an amendment to its petition for temporary tolerances of 0.05 ppm for residues of the herbicide N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo-[1,5a]-pyrimidine-2-sulfonamide (DE-498, formerly XRD-498; flumetsulam) in/on soybeans. This amendment also concerns a request for an Experimental Use Permit for Broadstrike + Treflan (formerly XRM-5313; containing DE-498 and trifluralin) on soybeans. This amendment dated July 14, 1992 was submitted in response to N. Dodd's reviews dated 3/27/92 and 3/10/92.

The petitioner has submitted a revised Section F dated 6/16/92 in which he proposes a temporary tolerance for DE-498 on soybeans at 0.05 ppm. In this revised Section F, the petitioner does not

propose a temporary tolerance on corn since he intends to address corn deficiencies separately.

No tolerances for DE-498 have been established. A crop destruct Experimental Use Permit (62719-EUP-13) for XRM-5019 (an end-use product containing DE-498) was issued by EPA on 3/8/91.

CONCLUSIONS

Note: All deficiencies/data requirements noted below apply to a permanent tolerance request only.

PRODUCT CHEMISTRY

§61-1

The following information is required under §61-1:

1b. For a permanent tolerance, further identification of one impurity discussed in the Confidential Appendix may be desired.

§62-1

The following information is required under §62-1:

4a. For a permanent tolerance, further identification of one impurity discussed in the Confidential Appendix may be desired.

4b. For permanent tolerances, the batch analyses for the impurities should be reported as weight % (not area %) as described under §62-1(b) in the Confidential Appendix.

4c. (new deficiency) For a permanent tolerance, the mean, standard deviation, and relative standard deviation for one impurity discussed in the Confidential Appendix should be reported from the batch analyses.

§62-3

The following additional information is required under §62-3:

6a. The petitioner should submit analytical methods for determining some impurities discussed in the Confidential Appendix.

6b. The precision and accuracy of the methods for the impurities discussed in the Confidential Appendix should be reported.

§63-5 and 63-12

The following additional information is required under §63-5 and §63-12:

7. The methods used to identify the physical/chemical properties in §63-5 and 63-12 should be identified as described in §63-1(b) and (c) of the guidelines ("Pesticide Assessment Guidelines, Subdivision D, Product Chemistry").

§63-8

The following additional information is required under §63-8:

8a. The solubilities in g/100 ml solvent [or if sparingly soluble in other terms such as ppm (mg/kg)] are needed for representative nonpolar solvents commonly used for pesticides.

RESIDUE CHEMISTRY

Manufacture

10. The manufacturing process is adequately described. The impurities in DE-498 Technical are not expected to be of concern with respect to residues in food or feed crops.

Formulations

11. Registration Division has indicated that the inerts in XRM-5019 and in Broadstrike* + Treflan* (formerly XRM-5313) are cleared under 40 CFR §180.1001 (c) or (d).

Nature of the Residue

Soybeans:

13b. A conclusion regarding the adequacy of the available metabolism data for a permanent tolerance will be determined when the final metabolism report (which the petitioner indicated would be submitted in July 1992) is reviewed. Further details summarized in a handout at the 5/19/92 meeting will be reviewed in the final metabolism study.

Animals:

15. The nature of the residue in animals is adequately defined for this proposed use provided that no detectable or very low residues are found in feed items. The residue of concern in ruminants is DE-498 per se. The residues of concern in poultry are DE-498 per se and the 5-hydroxy metabolite. Provided that no detectable or very low residues are found in feed items, tolerances will not be required on animal commodities.

For uses which may result in detectable residues in feed items, additional animal metabolism data on ruminants and poultry may be required.

Analytical Methods

Plants:

16g. Interferences should be investigated by screening (ie. comparing the mass spectra of the pure chemicals) to determine which of the other pesticides registered on soybeans are likely to interfere. Then an interference study should be conducted if any of these other pesticides registered on soybeans are likely to interfere with the analysis of DE-498.

16i. An EPA lab must perform a method validation for Method No. ACR 91.6 on soybeans and/or corn.

Animals:

18. No analytical methods have been submitted for animal commodities. Analytical methods for animal commodities will not be required provided that no detectable or very low residues are found in feed items and no detectable residues are expected to occur in animal commodities as a result of the proposed use.

Residue Data

Soybeans:

23b. CBTS concludes for purposes of the temporary tolerance that no detectable residues are expected to occur on soybeans as a result of the proposed use. Therefore, the proposed temporary tolerance of 0.05 ppm for DE-498 on soybeans will be adequate to cover residues on soybeans resulting from the proposed use.

23c. The CSF's for XRM-5019 75% WDG and XRM-4950R have been submitted in MRID #424070-03. Bridging data will not be needed since the two formulations (XRM-5019, a water dispersible granular, and XRM-4950R, an aqueous suspension concentrate) are similar formulation types when diluted in a spray tank and applications will not be made close to harvest.

23f. References to the crop oil concentrate and non-ionic surfactant have been deleted from the revised label dated 7/24/92 for the temporary tolerance on soybeans.

In response to the petitioner's request for guidance regarding the need for residue data for pesticides which could be applied with various surfactants or crop oils, data reflecting use of a representative surfactant and data reflecting use of a representative crop oil would be adequate. The surfactant and crop oil should not be combined unless this would be done commercially.

23i) Adequate storage stability data on soybeans are available for the purposes of the temporary tolerance. From the available

information, residues in soybeans are stable for at least 908 days (30 months). CBTS will accept storage stability data for 30 months to support residue data on soybeans stored up to 32 1/2 months.

For the permanent tolerance on soybeans, the final amended storage stability report (which the petitioner indicates will be submitted at a later date) will be reviewed for adequacy.

Meat, Milk, Poultry, and Eggs

26. Since CBTS has concluded for the purposes of the temporary tolerance on soybeans that no detectable residues are expected to occur in feed items as a result of the proposed use, no animal feeding studies and no tolerances for animal commodities will be required for purposes of the temporary tolerance on soybeans.

For purposes of the permanent tolerance, CBTS must reserve its conclusion regarding the need for animal feeding studies until questions regarding the product chemistry, plant metabolism, plant analytical methods, and storage stability are resolved. If no detectable residues are found in feed items, no animal feeding studies and no tolerances for animal commodities will be required.

Other Conclusion

CBTS's concern regarding trifluralin registered label rates vs the proposed Broadstrike* + Treflan* label rate is resolved since the available residue data indicate that residues on the raw agricultural commodity soybeans reflecting treatment at 1 lb ai/A will not exceed the established tolerance of 0.05 ppm for trifluralin on soybeans. (The trifluralin data gap regarding the soybean processing study will be addressed in connection with the registration standard.)

RECOMMENDATIONS

CBTS recommends for establishing the proposed temporary tolerance for N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo-[1,5a]-pyrimidine-2-sulfonamide on soybeans at 0.05 ppm.

CBTS also recommends for the proposed EUP for the formulation Broadstrike* + Treflan* pending establishment of the proposed temporary tolerance for DE-498 on soybeans.

For a future permanent tolerance for DE-498 on soybeans, deficiencies listed in Conclusions 1b, 4a, 4b, 4c (new deficiency), 6a, 6b, 7, 8a, 13b, 15, 16g, 16i, 18, 23i, and 26 above must be addressed.

If the petitioner intends to return directions for use of crop oil concentrate or surfactant to the label for the purposes of a permanent tolerance, he should note 23f above.

CBTS recommends that a copy of this entire review be sent to the petitioner.

DETAILED CONSIDERATIONS

CBTS data deficiencies from the review of PP#1G04006 dated 3/27/92 (N. Dodd) are listed below, followed by the petitioner's responses and CBTS's discussion/conclusions.

PRODUCT CHEMISTRY

Refer to the Confidential Appendix.

RESIDUE CHEMISTRY

CBTS's Deficiency #10 re: Manufacture

The manufacturing process is not adequately described. Refer to the discussion under §61-2.

Petitioner's Response to Deficiency #10

Refer to the petitioner's response under §61-2.

CBTS's Conclusion re: Deficiency #10

Deficiency #10 is resolved by the petitioner's response to §61-2. The manufacturing process is adequately described. (Refer to the summary of the manufacturing process in the Confidential Appendix under "Residue Chemistry, Manufacturing Process" and to §61-2.) The impurities in DE-498 Technical are not expected to be of concern.

CBTS's Deficiency #11 re: Formulation

CBTS defers to Registration Division concerning whether the inerts in XRM-5019 are cleared.

Petitioner's Response to Deficiency #11

None.

CBTS's Conclusion re: Deficiency #11

Deficiency #11 is resolved. Registration Division has indicated that the inerts in XRM-5019 and in Broadstrike +Treflan (formerly XRM-5313) are cleared under 40 CFR §180.1001 (c) or (d).

CBTS's Deficiency #12a re: Proposed Use

The petitioner should submit a revised Section B/label with

the following additional information: the maximum number of applications, the maximum pounds ai/A/yr for postemergence uses, the maximum pounds ai/A/yr for all uses combined (preplant incorporated, preemergence, and postemergence), the minimum interval between applications, the minimum interval between the last application and harvest (preharvest interval), and the application rate also expressed in terms of pounds of active ingredient per acre (lbs ai/A).

Petitioner's Response to Deficiency #12a

The petitioner has submitted a revised label for XRM-5019 dated 7/24/92. The revised label contains the following requested information under "General Use Precautions":

"Do not exceed 1 application per year."

"Do not exceed a total application rate of 0.09 lb/acre of XRM-5019 (0.07 lb active/acre) in a single crop year."

"Preharvest interval: An interval of at least 85 days is required between application of XRM-5019 and soybean harvest."

Under the chart for soil applications to soybeans, the following footnote has been added:

"Do not exceed a total application rate of 0.09 lb/acre XRM-5019 (0.07 lb/acre ai) during a single crop year."

Under the chart for postemergence applications to soybeans, the following footnote has been added:

"Do not exceed 0.02 lb/acre of XRM-5019 (0.015 lb ai/acre) for postemergence application."

The application rates in pounds ai/A for preemergence and postemergence treatments are listed in the application rate charts on the revised label.

CBTS's Conclusion re: Deficiency #12a

Deficiency #12a is resolved by submission of the revised label.

CBTS's Deficiency #13b re: Nature of the Residue- Soybeans

For a future permanent tolerance, additional metabolism data will be required. In the submitted studies on soybeans, residues were not adequately characterized in any plant part. Residue components accounting for $\geq$10% of the residue after exhaustive extraction should be identified, preferably by two techniques (eg. TLC, HPLC, MS). Such components may include components A2 and B1

which were present in the 12-day and 28-day forage samples from ^{14}C-phenyl-labelled DE-498 treated soybeans. Analysis should also include determination of the presence of 2,6-difluoroaniline (possibly present as a product of hydrolysis of the sulfonamide linkage of ^{14}C-phenyl-labelled DE-498) and 5-methyl-(1,2,4)triazolo-(1,5a)pyrimidine-2-sulfonic acid [possibly present as a product of the hydrolysis of the sulfonamide linkage of (5-^{14}C) pyridine-labelled DE-498] at all sampling times by use of authentic standards.

Extractability of the residue into solvents used in the proposed analytical enforcement method should be determined. Most of the radioactivity should be extracted, or exhaustive attempts using acid, base, and/or enzymes should be made to do so. The petitioner should use the radiolabelled samples to determine what percentage of the total recovered radioactivity is determined by the proposed enforcement methodology.

The identity of the residues in all plant parts of the raw agricultural commodity which could be used for food or feed (seed, forage, and hay) should be determined. Samples should be either analyzed or frozen immediately after harvest. (Refer to the "Pesticide Assessment Guidelines, Subdivision O, Residue Chemistry", NTIS #PB83-153981 and to the "Standard Evaluation Procedure, Qualitative Nature of the Residue: Plant Metabolism", NTIS #PB87-208641.)

The additional work needed for the soybeans treated with phenyl labelled DE-498 may be done using reserve forage samples (12 and 28 day samples) provided they have been kept frozen. For the pyridine labelled DE-498, CBTS recommends a new study be conducted at the maximum rate that does not result in significant phytotoxicity. The green plant should be analyzed at intervals similar to those in the previous phenyl labelled study.

Petitioner's Response to Deficiency #13b

The petitioner has submitted additional metabolism data on soybeans. At the 5/19/92 meeting, the petitioner indicated that this report is a summary. The final report will be submitted in July 1992.

Additional work on reserve frozen soybean forage and beans which were treated postemergent with [^{14}C-phenyl]DE-498 was conducted. The organosoluble residues were analyzed by HPLC. 2,6-difluoroaniline was not present. Metabolites A2 and B1 (17% and 20%, respectively, of the total radioactive residue in the organo-soluble and acid-soluble fractions from late bloom forage) were treated with acid and B-glucosidase. Acid hydrolysis of A2 yielded B1 and then D2. Acid and enzyme treatment of B1 yielded D2.

A metabolism study after preplant soil incorporated treatments

with [^{14}C-phenyl]DE-498 and [5-^{14}C]DE-498 was conducted in 1991. The application rate was approximately 275 g/ha (4X the normal pre-emergence rate). Samples were taken as follows: 22 days after treatment (thinnings); 42 days (forage); 63 days (bloom-forage); and 139 days (beans and trash). HPLC analysis indicated that 2,6-difluoroaniline is not present. C1 from thinnings was identified as aminotriazole by methylation and GC/MS and cochromatography. By cochromatography C1 (aminotriazole) was identified as the major residue in the organic extract of postemergence-treated and PPI-treated beans. Residues found in soybean thinnings after PPI treatment were A2, B, C, D, DE-498, and F. Residues in 42 day forage after PPI treatment were A, B, C, D, D-498, and F. Corresponding residues in 63-day bloom-forage were A2, B, C, D, and F. Corresponding residues in 139 day trash were A1, B, D, DE-498, and F. Except for the bean, the soybean residues were qualitatively the same for phenyl labeled and 5-^{14}C labeled DE-498 PPI treatments. Residues in the bean reflecting PPI treatment with phenyl labeled DE-498 were A, B, C, D, and F. Residues in the bean reflecting PPI treatment with 5-^{14}C-DE-498 were A1, A2, and B.

Acid and enzyme treatment (→) of metabolites yielded the following results:

A1, A2, B1, D2 → D2
C2, C3 → B → D2
D1 → C1 and DE-498

A proposed metabolic pathway for soybeans is attached (Attachment 1).

CBTS's Conclusion re: Deficiency #13b

CBTS previously concluded (PP#1G04006, N.Dodd, 3/27/92) that the nature of the residue in soybeans is adequately defined for the proposed EUP only. DE-498 can be considered to be the residue of concern.

A conclusion regarding the adequacy of the available metabolism data for a permanent tolerance will be determined when the final metabolism report (which the petitioner indicated would be submitted in July 1992) is reviewed. Further details summarized in a handout at the 5/19/92 meeting will be reviewed in the final metabolism study.

CBTS's Deficiency #15 re: Nature of the Residue- Animals

The nature of the residue in animals is adequately defined for this proposed use provided that no detectable or very low residues are found in feed items. The residue of concern in ruminants is DE-498 *per se*. The residues of concern in poultry are DE-498 *per se* and the 5-hydroxy metabolite. Provided that no detectable or very low residues are found in feed items, tolerances will not be

required on animal commodities.

For uses which may result in detectable residues in feed items, additional animal metabolism data on ruminants and poultry may be required.

Petitioner's Response to Deficiency #15

None.

CBTS's Conclusion re: Deficiency #15

Deficiency #15 as stated above remains outstanding.

CBTS's Deficiency #16 re: Analytical Methods- Plants

The analytical methodology for soybeans is not adequate as submitted. The following additional information is needed:

a) The source/supplier of methylene chloride should be included in the method.

d) Method No. ACR 91.6 uses an internal standard. Generally, an enforcement method cannot use an internal standard. However, the deuterated standard is expected to behave the same chemically as the DE-498. This internal standard is acceptable in the enforcement method provided that the deuterated internal standard is made available along with the DE-498 analytical standard to RTP and enforcement labs.

e) Enforcement methods should require a maximum of 24 hours for completion, whereas this method took the validating lab 30 person-hours and 4 calendar days. Efforts should be made to shorten the method for enforcement purposes.

f) A confirmatory method should be provided for enforcement purposes.

g) An interference study should be conducted to determine if other pesticides registered soybeans would interfere with the method. This specificity study is needed for enforcement purposes.

h) Analytical reference standards for DE-498 including the deuterated analog and other residues of concern, if any, should be sent to the Pesticide and Industrial Chemicals Repository (MD8), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. Two grams each of the purified analytical standards should be provided for the pesticide and principal degradation products or metabolites. The Material Safety Data Sheets should be included as required by OSHA in 29 CFR 1910.1200. A letter of transmittal accompanying the standards should include the following: the purity of the standards; analytical methods used

to assay the standards; a statement of principal impurities; purification procedures; storage requirements; and special precautions for safe handling.

i) When the necessary information is provided, CBTS will request an EPA lab to perform a method validation for Method No. ACR 91.6 on corn and soybeans.

Petitioner's Response to Deficiency #16

a) "In Analytical Method ACR 91.6 (MRID 419521-04), on page 4, Section 6a, are listed the solvents required for the execution of the method. The source and supplier of the methylene chloride are included in this list."

d) "As described in Analytical Method ACR 91.6, on page 6, Section 7b, the deuterated DE-498 internal standard is readily prepared from analytical standard DE-498 and commercially available deuterated methyl iodide. Because of the straightforward nature of its preparation (it is prepared following the same derivatization procedure as used for the residue samples), and the fact that only a small amount is required for each sample (a single preparation as described in the method is sufficient for 20,000 analyses), DowElanco has not prepared the deuterated DE-498 as an analytical standard available in a bottle. However, if such a standard is required, DowElanco will prepare a sufficient amount to provide to the Agency."

"The DE-498 analytical standard was shipped to Mr. Terry Bundy at Research Triangle Park on July 11, 1991."

The petitioner indicated in the meeting on 5/19/92 that the deuterated DE-498 will be sent to the Repository in Research Triangle Park.

e) "The total time specified in the validation report for Analytical Method ACR 91.6 (MV000036, MRID 419521-05) was indeed 30 hours. However, we have found that once standards, reagents, and the instrument were set up, a set of six samples could be processed in six hours."

In the meeting on 5/19/92, the petitioner provided the following information on how the 30 hours were spent:

review of the method.....1 hour
preparation of standards and reagents.....5 hours
preparation of the analytical set.....6 hours
preparation and calibration of instrument.....4 hours
data manipulation following the run.....6 hours
data review, reporting, and auditing.....8 hours

f) "Many analytical methods that use gas chromatography combined with a semi-specific means of detection such as an electron capture detector (ECD) or nitrogen-phosphorus detector (NPD) require the use of either a second chromatographic column or a more specific detector for confirmation of the presence of the analyte in question. For gas chromatographic separations, mass spectrometry is usually regarded as being the most specific detector; it is considered the 'referee' technique for many analyses that have legal ramifications (e.g. drug testing). DowElanco has chosen to use high resolution capillary gas chromatography combined with electron-impact selected ion monitoring mass spectrometry (GC/EI-SIM-MS) as the routine method of analysis for the determination of DE-498 in raw agricultural commodities. Following separation of the mixture by high resolution capillary gas chromatography, detection of DE-498 is achieved by monitoring two ions that are characteristic of the molecule. Specificity for DE-498 (i.e. confirmation for the presence of DE-498) is achieved because the ratio of the peak areas of the two ions monitored will be the same for DE-498 whether it is present in a standard solution or in a complex sample matrix (page 10, Section 10a). In this manner, GC/EI-SIM-MS offers 'built-in' confirmation that is unavailable for non-GC/MS techniques. Any other type of chromatographic separation or detection mechanism would only be less specific, especially at the low levels of quantitation that are achieved by the present methodology. For this reason, an additional confirmatory method should not be required."

g) "To date, the performance of Analytical Method 91.6 has not been found to be affected by impurities in the reagents, solvents, or materials specified in the method. Although DowElanco would not expect other pesticides registered for use on corn or soybeans to interfere with the method for the reasons discussed in the response to the Agency's question 16f above, DowElanco will investigate 10-15 pesticides registered for use on the above crops to determine if there is any potential for interferences with Analytical Method 91.6."

h) "The DE-498 analytical standard was shipped to Mr. Terry Bundy at Research Triangle Park on July 11, 1991. The transmittal letter included the appropriate information. The deuterated DE-498 analytical standard, if required by the Agency, will be provided to the Repository after it is prepared and characterized."

The petitioner indicated in the meeting on 5/19/92 that the deuterated DE-498 will be sent to the Repository in Research Triangle Park.

i) "No response required."

<u>CBTS's Conclusion re: Deficiency #16</u>

a) Deficiency #16a is resolved. The source/supplier of the

methylene chloride is now included in Analytical Method ACR 91.6 on page 4, Section 6a. The supplier is Fisher Scientific, Pittsburg, Pa 15219.

d) Deficiency #16d is resolved. As stated by Pat Byer of Research Triangle Park (8-919-541-3951) in a phone conversation with Nancy Dodd on 7/20/92, RTP has received the deuterated analytical standard N-d_3-methyl DE-498. DE-498 is also at RTP under the name XRD-498.

e) Deficiency #16e is resolved by submission of the additional information about how the 30 hours was spent. Steps 2 through 5 took 21 hours.

f) Deficiency #16f is resolved. A confirmatory method is not needed since the method combines gas chromatography with mass spectroscopy.

g) Deficiency #16g regarding the need for an interference study remains outstanding. However, interferences can first be investigated by screening (ie. comparing the mass spectra of the pure chemicals) to determine which of the other pesticides registered on corn and soybeans are likely to interfere. Then an interference study should be conducted if any of these other pesticides registered on corn and soybeans are likely to interfere with the analysis of DE-498.

h) Deficiency #16h is resolved. See 16d above.

i) Deficiency #16i remains outstanding. An EPA lab must perform a method validation for Method No. ACR 91.6 on soybeans and/or corn.

CBTS's Deficiency #17b re: Multiresidue Methods

The petitioner should explain why testing through Multiresidue Protocols D and E was not submitted. Testing through Protocol A is not required because DE-498 does not contain the N-methylcarbamate structure.

Petitioner's Response to Deficiency #17b

The submission contains the following response:

"At the time the Multiresidue Method study was conducted, the decision tree was different than it appears today, and it was thought that testing through Multiresidue Protocols D and E was not needed. However, DowElanco will conduct the additional testing through Multiresidue Protocols D and E, and submit such studies when completed."

However, at the 5/19/92 meeting, the petitioner indicated that

multiresidue methods "D" and "E" are not appropriate for DE-498 since DE-498 must be methylated to be chromatographed. Methods "D" and "E" do not include a methylation step.

CBTS's Conclusion re: Deficiency #17b

Deficiency #17b is resolved. Multiresidue methods "D" and "E" are not appropriate for DE-498.

CBTS's Deficiency #18 re: Analytical Methods- Animals

No analytical methods have been submitted for animal commodities. Analytical methods for animal commodities will not be required provided that no detectable or very low residues are found in feed items and no detectable residues are expected to occur in animal commodities as a result of the proposed use.

Petitioner's Response to Deficiency #18

"No response required."

CBTS's Conclusion re: Deficiency #18

Deficiency #18 as stated above remains outstanding.

CBTS's Deficiencies #23 (b-g and i) re: Residue Data- Soybeans

Residue data on soybeans are not adequate for reasons "b-g" and "i" below: (Refer to the "Pesticide Assessment Guidelines, Subdivision O, Residue Chemistry", NTIS #PB83-153981; "Magnitude of the Residue: Crop Field Trials", Standard Evaluation Procedure, NTIS #PB86-129426; and "Magnitude of the Residue: Crop Field Trials", Addendum #2 on Data Reporting, NTIS # PB86-248192.)

b) The following information is needed to evaluate the adequacy of the residue data: the maximum number of applications, the maximum pounds ai/A/yr for postemergence uses, the maximum pounds ai/A/yr for all uses combined (preplant incorporated, preemergence, postemergence), the minimum interval between applications, and the minimum interval between the last application and harvest (preharvest interval).

c) Adequate bridging data for comparison of residues resulting from the proposed formulation XRM-5019 (a water dispersible granular formulation) and the experimental formulation XRM-4950R (an aqueous suspension concentrate) are not available. Although not required, CBTS recommends that a protocol for bridging data should be submitted before additional work is done.

d) The complete second method (ie. other than method ACR 91.6) which was used to analyze residues in soybeans (in MRID #419521-06) should be submitted.

e) The label indicates that soybeans can be treated up to the fifth trifoliate leaf stage of growth. The growth stage of the soybeans at treatment in all field trials should be indicated. Since the highest residues would be expected to result from postemergence treatment of soybeans which were at the fifth trifoliate leaf stage of growth, that use pattern must be adequately represented.

f) The label indicates that postemergence applications must be made with a non-ionic surfactant at 0.25% v/v (1 qt/100 gal) or a crop oil concentrate at 1% v/v (1 gal/100 gals) in the spray. No residue data were submitted reflecting use of the crop oil concentrate or nonionic surfactant in the DE-498 spray solution. Therefore, references on the label to the crop oil concentrate and non-ionic surfactant should be deleted or additional residue data should be submitted reflecting use of the crop oil concentrate and the nonionic surfactant.

g) The petitioner has indicated that samples were stored frozen. Storage temperature should be specified.

i) Available storage stability data (up to 411 days) do not support residue data on soybean samples stored longer (ie. up to 32 1/2 months).

Petitioner's Response to Deficiencies #23 (b-g and i)

b) The petitioner has submitted a revised label for XRM-5019 dated 7/24/92. The revised label contains the following requested information under "General Use Precautions":

"Do not exceed 1 application per year."

"Do not exceed a total application rate of 0.09 lb/acre of XRM-5019 (0.07 lb active/acre) in a single crop year."

"Preharvest interval: An interval of at least 85 days is required between application of XRM-5019 and soybean harvest."

Under the chart for soil applications to soybeans, the following footnote has been added:

"Do not exceed a total application rate of 0.09 lb/acre XRM-5019 (0.07 lb/acre ai) during a single crop year."

Under the chart for postemergence applications to soybeans, the following footnote has been added:

"Do not exceed 0.02 lb/acre of XRM-5019 (0.015 lb ai/acre) for postemergence application."

c) Refer to the Confidential Appendix.

d) "Early soybean samples were first analyzed for DE-498 by a procedure that differed only slightly from the proposed enforcement method (Analytical Method ACR 91.6). The method involved a liquid/liquid extraction using diethyl ether as a solvent and diazomethane as the methylating reagent. The development of the proposed enforcement method eliminated the use of these reagents; data generated by both procedures is comparable and all data is included in the report. The method, as originally developed, is contained in Appendix A."

In the 5/19/92 meeting, the petitioner indicated that the liquid/liquid extraction using diethyl ether as a solvent was replaced with a solid-phase extraction. Diazomethane was replaced with methyl iodide as the methylating agent.

Tabulated recoveries for the diazomethane method and the methyl iodide method were submitted in the 5/19/92 meeting. Recoveries were 92% for the earlier diazomethane method and 91% for the methyl iodide method (ACR 91.6).

e) "The information requested by the Agency is contained in DowElanco's raw data files for soybean magnitude of the residue trials GH-C 2546 (MRID 419317-20) and GH-C 2560 (MRID 419521-06). This data for each field experiment is contained in the attached Appendix B."

f) The label has been revised to delete the use of a non-ionic surfactant or a crop oil concentrate in the spray.

The petitioner asks: "Could guidance be given regarding the specific requests for post emergence residue trials involving surfactants? Is it necessary to test all surfactants individually in order to add them to the label?"

g) "Storage temperatures for all soybean samples were maintained at least below -10°C."

i) The petitioner has reported storage stability for DE-498 in soybeans in a table as follows. The soybeans were spiked with 1.00 ppm DE-498. Percent recoveries reported were corrected for average recovery determined at the time of analysis.

Time Interval (days)	Percent Recovery
0	105
64	103
124	104
187	99
411	93
908	97

The petitioner indicates that sample preparation, storage, and

analysis were the same as described in MRID #41931718. The petitioner also indicates that the above results will be incorporated later into an amended study.

CBTS's Discussion/Conclusion re: Deficiencies #23 (b-g and i)

b) Deficiency #23b is resolved by submission of the revised label. CBTS concludes for purposes of the temporary tolerance that no detectable residues are expected to occur on soybeans as a result of the proposed use. Therefore, the proposed temporary tolerance of 0.05 ppm for DE-498 on soybeans will be adequate to cover residues on soybeans resulting from the proposed use.

c) The CSF's for XRM-5019 75% WDG and XRM-4950R have been submitted in MRID #424070-03. CBTS concludes that bridging data will not be needed since the two formulations (XRM-5019, a water dispersible granular, and XRM-4950R, an aqueous suspension concentrate) are similar formulations when diluted in a spray tank and applications will not be made close to harvest.

d) The earlier method in Attachment A has a limit of quantitation of 0.010 ppm, whereas the newer method ACR 91.6 has a limit of quantitation of 0.005 ppm (as stated in MRID #419521-06).

Deficiency #23d is resolved by submission of the additional information.

e) Deficiency #23e is resolved. As summarized in Appendix B, postemergence treatments of soybeans reported in MRID #419317-20 and MRID #419521-06 occurred at the 3rd through 7th trifoliate leaf stage of growth. Most of the postemergence treatments occurred at the fifth trifoliate leaf stage of growth or later. Therefore, the use pattern reflecting treatment at the 5th trifoliate leaf stage of growth is adequately represented.

f) Deficiency #23f is resolved by submission of the revised label. References to the crop oil concentrate and non-ionic surfactant have been deleted from the revised label dated 7/24/92 for the temporary tolerance on soybeans.

In response to the petitioner's request for guidance regarding the need for residue data for pesticides which could be applied with various surfactants or crop oils, data reflecting use of a representative surfactant and data reflecting use of a representative crop oil would be adequate. The surfactant and crop oil should not be combined unless this would be done commercially.

g) Deficiency #23g is resolved by submission of the additional information.

i) Deficiency #23i regarding storage stability of soybeans is resolved for purposes of the temporary tolerance. Adequate storage

stability data are available for purposes of the temporary tolerance. From the available information, residues in soybeans are stable for at least 908 days (30 months). CBTS will accept storage stability data for 30 months to support residue data on soybeans stored up to 32 1/2 months.

For the permanent tolerance on soybeans, the final amended report (which the petitioner indicates will be submitted at a later date) will be reviewed for adequacy.

CBTS's Deficiency #26 re: Meat, Milk, Poultry, and Eggs

CBTS must reserve its conclusion regarding the need for animal feeding studies until questions regarding the proposed use, plant metabolism, plant analytical methods, and residue data are resolved. If no detectable residues are found in feed items, no animal feeding studies and no tolerances for animal commodities will be required.

Petitioner's Response to Deficiency #26

None.

CBTS's Discussion/Conclusion re: Deficiency #26

Deficiency #26 is resolved for purposes of the temporary tolerance. Since CBTS has concluded for the purposes of the temporary tolerance on soybeans that no detectable residues are expected to occur in feed items as a result of the proposed use, no animal feeding studies and no tolerances for animal commodities will be required for purposes of the temporary tolerance on soybeans.

For purposes of the permanent tolerance, CBTS must reserve its conclusion regarding the need for animal feeding studies until questions regarding the product chemistry, plant metabolism, plant analytical methods, and storage stability are resolved. If no detectable residues are found in feed items, no animal feeding studies and no tolerances for animal commodities will be required.

CBTS's data deficiencies from the review of PP#1G04006 dated 3/10/92 (N. Dodd) are listed below, followed by the petitioner's responses and CBTS's discussions/conclusions.

CBTS's Deficiency #2

No temporary or permanent tolerance is established for DE-498 on soybeans. The petition requesting a temporary tolerance is in reject status. (See PP#1G04006, N. Dodd, March 1992.)

Petitioner's Response to Deficiency #2

The petitioner has supplied responses to deficiencies for a temporary tolerance for DE-498 on soybeans.

CBTS's Conclusion re: Deficiency #2

CBTS now recommends for a temporary tolerance for DE-498 on soybeans at 0.05 ppm. CBTS also recommends for the proposed EUP for the formulation Broadstrike + Treflan pending establishment of the proposed temporary tolerance for DE-498 on soybeans.

CBTS's Deficiency #3

The proposed use rate for trifluralin in the proposed XRM-5313 formulation must be revised to be consistent with registered trifluralin labels. The two EPA approved trifluralin labels discussed below under Detailed Considerations indicate that broadcast rates range from 0.5-1.25 lb ai/A, depending on soil texture and percent organic matter. Most of the formulations which do not have geographic limitations have a range of application rates starting at 0.5 lb ai/A. The proposed XRM-5313 label, however, indicates that trifluralin will be applied at the rate of 0.85-0.96 lb ai/A depending on soil type. These directions are not equivalent. The petitioner should therefore revise his label directions for XRM-5313 to be consistent with currently registered labels for trifluralin.

Petitioner's Response to Deficiency #3

"The trifluralin rates proposed in formulation XRM-5313 are within those ranges already approved for trifluralin. The exception to this is in the highest rate range where the proposed use rates for XRM-5313 are below those already approved for trifluralin. The highest approved labeled rate for trifluralin is 1.0 lb ai per acre on coarse soils and 2.0 lb ai per acre on fine textured soils. The maximum use rate of trifluralin in the XRM-5313 combination is 0.96 lb ai per acre. The trifluralin rates in XRM-5313 that are proposed in combination with DE-498 are dictated by the constant ratio of the two products in the mix. The DE-498 component is not as influenced by soil types as is trifluralin, yet trifluralin rates are below those approved for all soil types. The XRM-5313 combination rates were selected to provide adequate weed control but yet stay within label approved rates for trifluralin and be supported by residue data for both compounds. Furthermore, DowElanco will additionally modify its XRM-5313 label by further lowering the rate range for coarse soils. Again this new lowered rate will still be within those already registered for trifluralin for use on soybeans. The new labeling will be submitted shortly, along with the previously indicated changes."

CBTS's Discussion re: Deficiency #3

CBTS's concerns involve the spring application directions for preplant soil incorporation for soybeans on the Treflan EC and Treflan MTF labels. Both products contain 4 lbs ai/gallon. Both labels contain directions as follows:

soil texture	spring application (pints)	fall application (pints)
coarse	1.0	2.0
medium	1.5	2.0
fine	2.0	2.5

- coarse and medium soils with 2-5% organic matter- 1.5 pints
- fine soils with 2-5% organic matter- 2.0 pints
- soils with 5-10% organic matter- 2.0 to 2.5 pints

The revised label for Broadstrike* + Treflan* (formerly XRM-5313) dated 7/24/92 indicates that trifluralin rates can be 0.64-0.96 lb ai/A depending on soil type.

Numerous residue studies on soybeans reflecting treatment at rates $\geq$ 1 lb trifluralin/A are available in the Residue Chemistry Chapter dated 7/12/85 of the Trifluralin Registration Standard. These studies indicate that residues on the raw agricultural commodity soybeans reflecting treatment at 1 lb ai/A will not exceed the established tolerance of 0.05 ppm for trifluralin on soybeans.

A soybean processing study is required in connection with the trifluralin registration standard.

CBTS's Conclusion re: Deficiency #3

CBTS's concern regarding trifluralin registered label rates vs the proposed Broadstrike* + Treflan* label rate is resolved since the available residue data indicate that residues on the raw agricultural commodity soybeans reflecting treatment at 1 lb ai/A will not exceed the established tolerance of 0.05 ppm for trifluralin on soybeans. (The trifluralin data gap regarding the soybean processing study will be addressed in connection with the registration standard.)

CBTS's Deficiency #5

CBTS defers to Registration Division concerning whether the inerts in XRM-5313 are cleared under 40 CFR §180.1001.

Petitioner's Response to Deficiency #5

None.

CBTS's Conclusion re: Deficiency #5

Deficiency #5 is resolved. Registration Division has indicated that the inerts in Broadstrike + Treflan (formerly XRM-5313) are cleared under 40 CFR §180.1001 (c) or (d).

ATTACHMENT 1: Proposed Soybean Metabolic Pathway
ATTACHMENT 2: Product Chemistry Chapter (Confidential Appendix A)

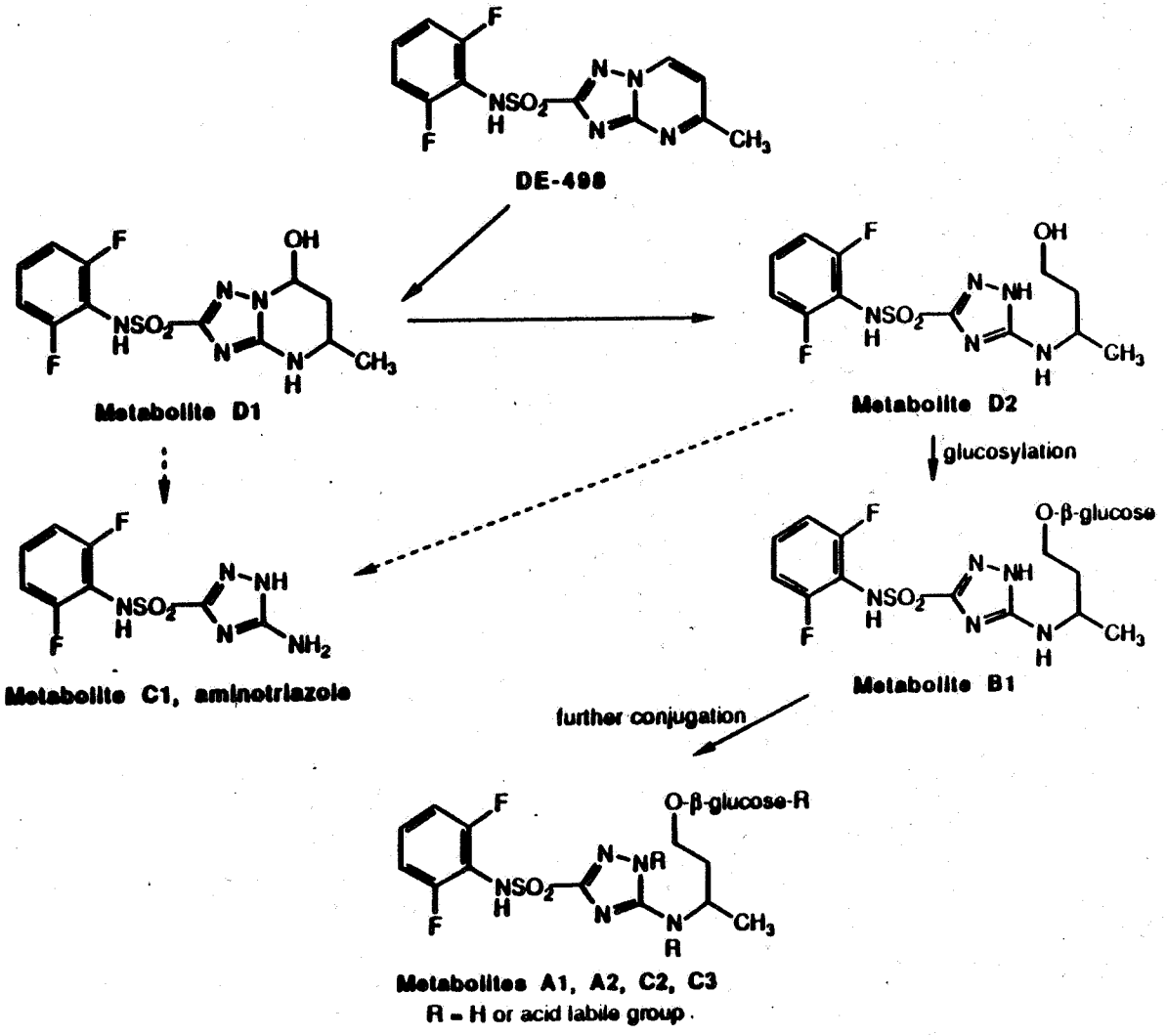
cc with Attachments 1 and 2: DE-498 SF, Trifluralin SF, N. Dodd (CBTS), E. Haeberer (CBTS), PP#1G04006, PM#23, TOX (II), Trifluralin Registration Standard- P. Deschamp, J. Kariya (DRES/SAB)

cc with Attachment 1 only: Circu (7), RF

RDI:E. Haeberer:8/17/92:R. Loranger:8/19/92
H7509C:CM#2:Rm 804F:X55681:N.Dodd:nd:8/19/92

FIGURE 21

PROPOSED METABOLIC PATHWAY FOR DE-498 IN SOYBEANS



Page_____ is not included in this copy.

Pages 23 through 34 are not included.

The material not included contains the following type of information:

____ Identity of product inert ingredients.

____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

____ Sales or other commercial/financial information.

____ A draft product label.

____ The product confidential statement of formula.

____ Information about a pending registration action.

____ FIFRA registration data.

____ The document is a duplicate of page(s) _____.

____ The document is not responsive to the request.

√ CONFIDENTIAL APPENDIX

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.